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Yasuo Suda

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FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

SOLOMON, GARY L

ART UNIT

PAPER NUMBER

2615

13

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/604,743

Applicant(s)

SUDA, YASUO

Examiner

Gary L Solomon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☒ Claim(s) 16-18 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11 and 12.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 5-11-2004 have been fully considered but they are not persuasive.

Applicant submits the Miyazaki '572 patent is silent with respect to the focal lengths of the composite optical systems of an image pickup apparatus. Applicant is correct in the fact that the written specification of the Miyazaki '572 patent is silent with respect to focal lengths.

However, the applicant is also hereby informed that the Figures are also part of the disclosure in a patent. It is clearly shown in Figure 1 that the focal lengths of the two respective optical systems are equal. It also clearly shown in Figure 1 that the optical systems have a certain or specific shape that make the focal length of each system equal to each other.

Applicant submits that knowledge of such an infrared cutting filter fails to anything to the Miyazaki '572 patent that would make obvious the claimed invention. Without conceding the propriety of the Applicant's remarks, Examiner submits that the Official Notice taken in the previous rejection is correct and Denyer (WO '631) teaches and infrared cutting filter on Page 16, Lines 20-30 that it would have been obvious to one of ordinary skill in the art at the time of the invention to have an infrared cutting filter in the apparatus of Miyazaki in order to protect against infrared rays outside the visible range as suggest on Page 6, Lines 20-30.

Applicant submits that's the Denyer (WO '631) reference fails to disclose or suggest lenses being made of photo chromic glass. Without conceding the propriety of the Applicant's remarks, Examiner submits that Denyer (WO '631) teaches lenses could be made from materials

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such as glass or any other suitable optical material on Page 16, Lines 10-20. Photo Chromic glass is a suitable material to make optical lenses.

Applicant submits that's the Nakanishi '420 patent fails to disclose or suggest optical systems being made of color purity filters. Without conceding the propriety of the Applicant's remarks, Examiner submits that Nakanishi '420 patent teaches optical systems are manufactured with color purity filters (Figures 6A-6C and Column 12, Lines 20-22). The filters are required for color correction of color purity and are well known in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine color purity filters with Miyazaki's system in order to restrict one of the RGB colors wavelength ranges as suggested by Nakanishi and cited in n Figures 6A-6C and Column 12, Lines 12-20.

Applicant submits that's the Motta '914 patent fails to disclose or suggest teaching wherein there is filter whose transmission factor of the filter becomes smaller as the optical axis becomes longer. Without conceding the propriety of the Applicant's remarks, Examiner submits that in analogous art, Motta teaches a filtering function which the transmission factor (sensitivity) becomes smaller as distance from the optical axis (Y) becomes longer in Figure 8A (Column 5, Lines 30-41). It is clearly shown in the indicated citations in the filtering function taught by Motta that as the transmission factor which is the sensitivity in the Motta '914 patent becomes smaller as distance from the optical axis (Y) becomes longer.

Therefore, it would have been obvious to combine the Miyazaki teaching with the idea of the decreasing transmission factor with distance of Motta in order to increase resolution (Column 1, Line 52 through Column 2, Line 40).

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7, 12, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki (US 4,873,572).

For claim 1, Miyazaki discloses an image pickup apparatus comprising:

first and second image pickup portions for receiving at least a first wavelength component of an object light and a second wavelength component of the object light different from the first wavelength component, respectively (**Column 4, Lines 10-26**);

first and second optical systems for guiding the first and second wavelength components of the object light to be received by said first and second image pickup portions to said first and second image pickup portions, respectively, via different optical paths (**Figure 1 and 20**),

said first and second optical systems being formed to have respective shapes so that the focal length of said first optical system with regard to said first wavelength component is equal to the focal length of said second optical system with regard to said second wavelength component (**Figure 1, Column 12, Lines 18-42**).

**(It is clearly shown in Figure 1 that the focal lengths of the two respective optical systems are equal. It also clearly shown in Figure 1 that the optical systems have a certain or specific shape that make the focal length of each system equal to each other.)**

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For claim 2, Miyazaki discloses all the previous limitations and also wherein the first wavelength component is a representative wavelength of light of a first spectral distribution and the second wavelength component is a representative wavelength of light of a second spectral distribution which is different from the first spectral distribution (Column 4, Lines 10-26, Column 5, Lines 47-54).

Color filters are used to produce separate visual fields. The two visual fields alternating on the right and left represent images with respective spectral distribution because of the different color filters that are used within each optical system.

For claims 3 and 4, Miyazaki discloses all the previous limitations and also wherein the first spectral distribution is a spectral distribution including peak wavelength of a luminosity factor (This is inherent. The visible wavelength in the luminosity factor is the color green).

For claim 5, Miyazaki discloses all the previous limitations and also wherein the first and second wavelength components are two different color components among red, green, and blue (Column 4, Lines 10-26).

For claim 6, Miyazaki discloses all the previous limitations and also wherein said first and second optical systems comprise a filter for respectively extracting said first and second wavelength components respectively (Column 4, Lines 10-26).

For claim 7, Miyazaki discloses all the previous limitations and also wherein each of said first and second optical systems comprises a single lens (Figure 20).

For claim 12, Miyazaki discloses all the previous limitations and also wherein said first and second optical systems comprise filters for extracting the first wavelength component and the second wavelength component respectively (Column 4, Lines 4-26; Figure 2B).

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For claim 18, Miyazaki discloses all the previous limitations further comprising:  
a plurality of openings for taking in external light through said first and second optical systems (Figure 20).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572) with a supporting reference of Denyer (WO 93/11631).

6. For claim 10, Miyazaki discloses all the previous limitations of claim 1, but lacks the teaching wherein each of said first and second optical systems comprises a single lens provided with an infrared radiation-cutting filter. Official Notice is given that a single lens is provided with an infrared cutting filter is well known in the art and is used to cut off infrared rays in the lens (See Denyer, Page 16, Lines 20-30).

7. Claim 8, 9, ~~10~~, 11, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572) as applied in claims 1 and 7 and further in view of Denyer (WO 93/11631).

For claim 8, Miyazaki discloses all the previous limitations, but lacks teaching wherein the lenses of said first and second optical systems are integrally formed of a glass material or a resin material. However, Denyer teaches a system wherein a plurality of single lenses of said

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plurality of optical systems are integrally formed of a glass material or a resin material (Page 16, Lines 11-15).

This is notoriously well known in the art and therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use lenses of glass or resin material in Miyazaki's apparatus because they are a suitable optical material to produce lenses (Page 16, Lines 11-15).

For claim 9, Miyazaki and Denyer disclose all the previous limitations and also wherein a light-shielding layer provided between said integrally formed single lenses (Miyazaki; Column 5, Line 55 through Column 6, Line 5).

For claim 11, Miyazaki discloses all the previous limitations, but lacks teaching wherein the first and second lenses are made of photo chromic glass. Denyer also teaches a system wherein each of said plurality of optical systems comprises photo chromic glass (Page 16, Lines 11-15).

For claim 16, Miyazaki discloses all the previous limitations and also wherein said first and second image pickup portions are integrally formed. Denyer discloses all the previous limitations wherein said plurality of image pickup portions are integrally formed (Figure 1; Page 9, Line 24).

For claim 17, Miyazaki discloses all the previous limitations, but lacks teaching wherein said plurality of image pickup portions are formed in a plane shape. Denyer teaches wherein said plurality of image pickup portions are formed in a plane shape (Page 16, Lines 17-18).

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572) as applied in claim 1 and further in view of Nakanishi (US 6,157,420).



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Miyazaki discloses all the previous limitations, but fails to disclose the first and second optical systems comprising a color purity correction filter. However, Nakanishi teaches the use of color purity correction filters (Figures 6A-6C and Column 12, Lines 20-22). The filters are required for color correction of color purity and are well known in the art.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine color purity filters with Miyazaki's system in order to restrict one of the RGB colors wavelength ranges as suggested by Nakanishi and cited in Figures 6A-6C and Column 12, Lines 12-20.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US 4,873,572) and further in view of Motta (US 5,565,914).

For claim 14, Miyazaki discloses all the previous limitations, but fails to disclose but lacks teaching wherein there is filter whose transmission factor of the filter becomes smaller as the optical axis becomes longer. However, in analogous art, Motta teaches a filtering function which the transmission factor (sensitivity) becomes smaller as distance from the optical axis (Y) becomes longer in Figure 8A (Column 5, Lines 30-41).

Therefore, it would have been obvious to combine the Miyazaki teaching with the idea of the decreasing transmission factor with distance of Motta in order to increase resolution (Column 1, Line 52 through Column 2, Line 40).

***Allowable Subject Matter***

10. Claim 15 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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11. The following is an examiner's statement of reasons for allowance:

The limitations set forth in the claim are not all disclosed in the prior art. The limitation, "when a virtual object distance  $D$  [m] is defined as a function of an image pickup angle  $\theta$  [degrees] of said optical systems to be  $D = 1.4/\tan(\theta/2)$ ," is novel.

*Conclusion*

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L Solomon whose telephone number is (703)-305-4370. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (703)-305-4946. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GLS



ANDREW CHRISTENSEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600